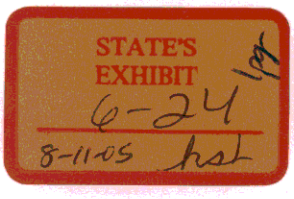
Proposed Method to Determine the Lag Effect of a Pumping Well on a Stream Where Acceptable Ground Water Models Do Not Exist

In areas where there are no acceptable models of the surface water stream/groundwater aquifer system, the Department will use the Jenkin's or SDF method to determine the lag effect of wells on a stream[1]. This method was used by the USGS to determine impacts and lag effects of wells on streams in the Missouri River Basin study[2] and is used for the same purpose by the State of Colorado, among others, where models do not exist. It is widely accepted as a good approximation of a wells impact on a stream. (Note: This is the same method that was used to calculate the SDL lines showing the extent of hydrological connection on the maps currently provided to the committee.)

The SDL line produced by the Jenkin's method is a function of the distance of the well from the stream, the thickness and hydrologic connectivity (transmissivity) of the aquifer, the specific yield of the aquifer. Though simplified the Jenkins method provided results that are not that different from those obtained by the use of the COHYST model (Figure 1.) The multimillion dollar COHYST model benefits from the use of more detailed datasets and improved modeling techniques, both of which allow for the accounting of more factors in the hydrologic budget. The biggest difference between the output of the Jenkins' method and the COHYST model is due to the consideration of evapotranspiration salvage in shallow aquifers that is modeled in COHYST but not the Jenkins method.



[1] Jenkins, C. T. Techniques for Computing Rate and Volume of Stream Depletion by Wells, Ground Water Volume 6, Number 2. 1968.

[2] Technical Paper, Ground Water Depletion, Missouri Basin States Association, U. S. Geological Survey, 1982.

Flow Administration Analysis – Loup and Big Blue River Basins

Loup River Basin

Between 1984 and 2003, the only records of administration that occurred in the Loup River Basin were due to instream flow targets not being met. Each year in the administrative record from 2000 through 2003 showed periods were Loup Basin water rights junior to the instream flow rights were closed.

The instream flow rights have a priority date of November 30, 1993 and therefore the administrative record does not cover the entire twenty-year period. An additional analysis was completed to show the number of days that the instream flow targets would cause Loup Basin junior water rights (JWRs) to be closed between October 1, 1983 and September 30, 2003. The results can be found in Table 1.

Table 1. Instream Flow Analysis

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jul 1 to Aug 15	May 1 to Sep 30	Total for All Days
Total Days in Month	620	565	620	600	620	600	620	620	600	620	600	620	920	3060	7305
Days in Month With JWRs Closed	67	32	12	6	32	62	194	274	188	100	38	98	329	750	1103
% of Days in Month Where JWRs Closed	11%	6%	2%	1%	5%	10%	31%	44%	31%	16%	6%	16%	36%	25%	15%

Big Blue River Basin

In the Big Blue River Basin the administrative record shows only a few occasions where a junior water right was closed for a senior right between 1984 and 2003. Administration occurred in each year between 2000 and 2003. Because almost all of the administration occurred on the Big Blue River Basin above the confluence of Lincoln Creek, that portion alone was used in the analysis.

The most junior water rights in this portion of the basin (above the confluence with Lincoln Creek) would be closed for Water Right No. A-2816 (Priority Date of 12/20/1937), Water Right No. A-10883 (Priority Date of 7/12/1966) or for the Big Blue River Compact (Priority Date of November 1, 1968). The most junior water rights had no closures between 1983 and 1999 but then were closed for 4 days in August 2000, 2 days in August 2001, 28 days in July and August 2002, and 48 days in July, August, and September 2003. A closure summary can be found in Table 2[1].

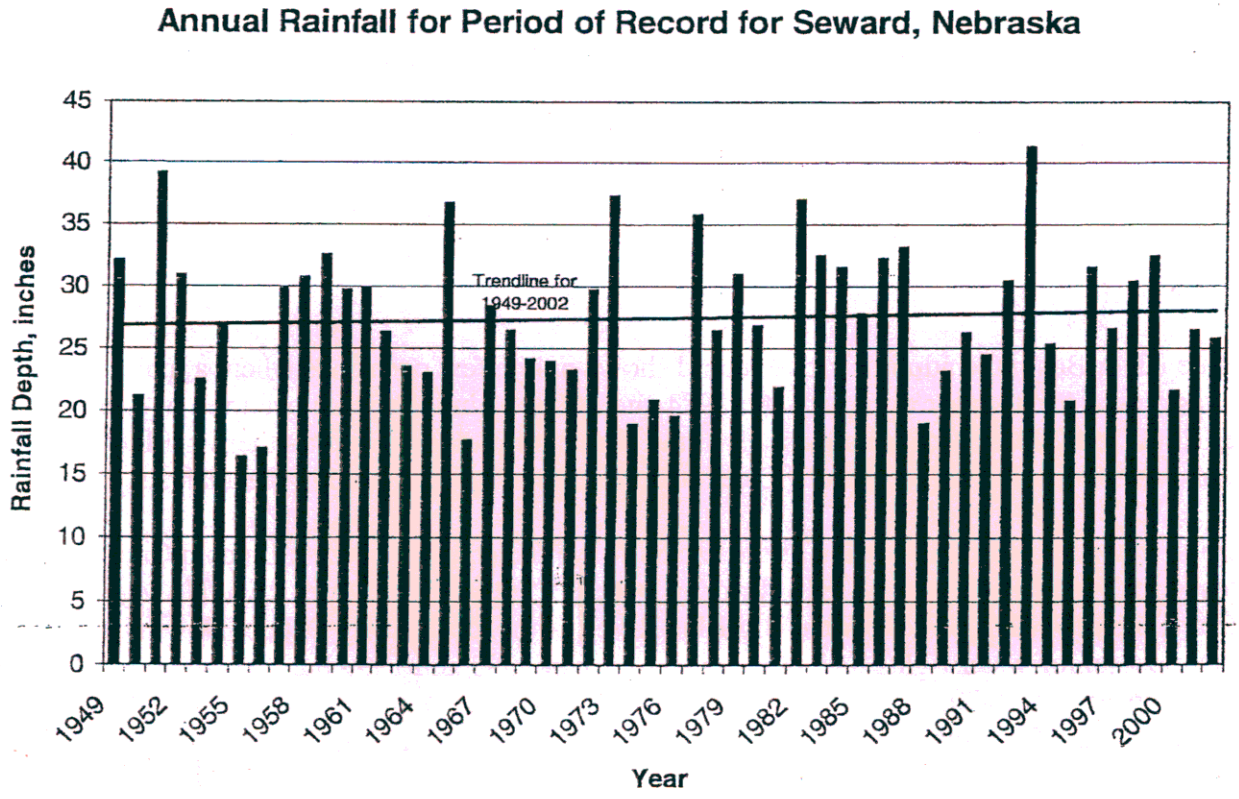
[1] Although not included in the analysis, the junior water rights were closed for 16 days in August 2004.

STATE'S EXHIBIT 6-25 8-1-05 kst

Table 1. Big Blue River above the Confluence with Lincoln Creek

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jul 1 to Aug 15	May 1 to Sep 30	Total for All Days
Total Days in Month	620	565	620	600	620	600	620	620	600	620	600	620	920	3060	7305
Days in Month With JWRs Closed	0	0	0	0	0	0	27	52	3	0	0	0	61	82	82
% of Days in Month Where JWRs Closed	0%	0%	0%	0%	0%	0%	4%	8%	1%	0%	0%	0%	7%	3%	1%

This Big Blue Basin above the confluence with Lincoln Creek experienced additional shortages of water resulting in junior water rights being closed during the middle 1950's and 1970's. All of the shortages coincide with multi-year droughts within the basin. The following chart shows the annual rainfall for Seward, near the mouth of Lincoln Creek, where the periods of multi-year shortfalls in rain can be seen.



Amount of Irrigation water required for sustainable irrigation.

Inputs:	Defaults
CIR for Corn, Inches/ac.	
Dryland ET for Corn	19
Fully Watered Yield, bu./Acre	
Non-Irrigated Yield	65
Water Use Efficiency	
Yield/Inch of ET (Corn)	
Crop Price, $/bu.	
Variable Irrigation Cost, $/inch	
Irrigation Start-up Costs, $/System	
Variable Production Costs for Corn, $/Acre	
Yield Dependent Costs, $/bu.	
Dryland ROVC, $/Acre	65
Irrigation Investment, $/130 Ac.Spk System	
Interest Rate	
Amortization period (years)	
Required Flow Rate (GPM/Acre)	
Acres per system (minimum size)	
% of Seasonal Requirement	
Needed from July 1 to August 15=	
Delivery efficiency (river to field)	
System downtime, proportion of time	

Inches Applied	Yield Increase Bu./Acre	Annual ROVC $/Acre	Annual ROVC $/System	Sustainable Investment	Net Gain From Invest. $/System	Net Gain From Invest. $/Acre
1	12	-56	-7,218	-61,784	-141,784	-1,091
2	25	-30	-3,918	-33,534	-113,534	-873
3	37	-5	-693	-5,929	-85,929	-661
4	48	19	2,452	20,990	-59,010	-454
5	60	42	5,512	47,177	-32,823	-252
6	71	65	8,479	72,578	-7,422	-57
7	82	87	11,347	97,127	17,127	132
8	92	109	14,107	120,746	40,746	313
9	102	129	16,746	143,337	63,337	487
10	112	148	19,250	164,771	84,771	652
11	121	166	21,599	184,879	104,879	807
12	130	183	23,765	203,414	123,414	949
13	138	198	25,701	219,987	139,987	1,077
14	145	210	27,321	233,854	153,854	1,183
15	150	218	28,316	242,372	162,372	1,249
16	NA	NA	NA	NA	NA	NA
17	NA	NA	NA	NA	NA	NA
18	NA	NA	NA	NA	NA	NA
19	NA	NA	NA	NA	NA	NA
20	NA	NA	NA	NA	NA	NA

Suggested rule expressed in inches per acre: A stream is fully appropriated if it cannot supply an average of at least 8 inches of water delievered to the field, with 90 percent of it delivered between July 1 and August 15.

Suggested rule expressed in "days of adequate flow":

Required diversion rate in cfs = 1.676046

Days required to meet seasonal requirement of	9 inchs =	29.3287
Days required to meet critical period requirement of	6.75 inchs =	21.99653

Suggested rule in round numbers: **A stream is fully appropriated if it cannot supply water at a rate of at least 1.5 cfs for an average of at least 28 days during the season, 24 of which must be between July 1 and August 15th.**
In computing this average the maximum number of days credited to a single year cannot exceed the number of days required to meet the full CIR.

STATE'S EXHIBIT 6-26 8-1-05 mal

Exhibit 27

Ann Diers

From: Roger Patterson [rpatterson@dnr.state.ne.us]
Sent: Tuesday, February 08, 2005 11:12 AM
To: Jeff Shafer; Tina Kurtz; Ann Diers; Ann Bleed; Pam Andersen
Subject: FW: NRM ideas

-----Original Message-----
From: Dan Smith [mailto:dsmith@mrnrd.org]
Sent: Monday, February 07, 2005 10:55 AM
To: Roger Patterson
Subject: NRM ideas

Roger,
The attachment has an idea I think might work for the areas to be consider after a determination is made. It allows you to designate a larger area but give the districts some options if they disagree.
****

Dan Smith, Manager
Middle Republican Natural Resources District
1-800-873-5613 308-367-4281
dsmith@mrnrd.org
www.mrnrd.org

STATE'S EXHIBIT 6-27 8-11-05

February 7, 2005

Negotiated Rule making

Roger,

These are some thoughts on where I see we could go with this process. As I have said before I don't think it matters where the lines are drawn if the methodology that defines them is correct. If DNR determines a basin is fully appropriated, many problems can arise in the areas outside of the area of immediate concern or in the overlap area into another NRD.

What if we used multiple zones. The primary zone would be the 28/40 line or whatever is decided upon. Stays imposed by this process would be handled as they are now.

We could also have a zone of secondary influence or connectivity. This secondary zone, 15/75 line, would have the stays imposed by DNR but they could be lifted by the NRD boards without a hearing. The board could choose to let the stays remain in the secondary zone and could adopt the same or different rules for each zone as the IMP process continues. In secondary zone board could lift stay on new wells or new acres and not be required to lift for both.

Primary or secondary zones that overlap into an NRD that is not in the basin being designated as fully appropriated would have the stays imposed but they could be lifted by the NRD board once again without a hearing.

I don't think the is a statute issue in the secondary zone is identified under a different part of the process from the primary zone. Your legal staff can decide that.

Preliminary Determination

Primary zones would be determined according to 46-713 (1) (a) (ii)
Lifting the primary stays require a hearing 46-714 (7)
Secondary zones would be identified under 46-713 (1) (a) (iii) and (b)
Secondary stays could be lifted by board action

Final Determination

If the board has not lifted the secondary stay between preliminary and final determination, lifting of stays in primary or secondary zones would require a hearing 46-714 (7). Boards could lift stay in secondary zone and leave primary zone in place.

2

6-59

Exhibit 28

Ann Diers

From: Barels, Brian L. [blbarel@nppd.com]
Sent: Friday, March 04, 2005 12:49 PM
To: Roger Patterson; Ann Diers
Cc: Steven Huggenberger; Kraus,, Don- Central Nebr. Pub. Pow. & Irr. Dist.; Hutchinson,, Larry- (non-NPPD recipient); Chad Smith; Dennis Strauch; goldfish@binary.net
Subject: FW: De minimis examples

_3-3-05 Fully Appropriated.doc...

Roger and Ann -- attached please find a proposal from a group of the members of the negotiated rulemaking . We wanted to get a straw dog put together for discussion at the meeting on Monday. We used as a starting point the straw dog put together by Don B. I think it is fair to say that this group represents those interested in ensuring the process maintains stream flow and provides a sincere commitment to protect those users when making the fully appropriated designations. The variations that occur due to precipitation etc. can be addressed in the integrated management plans but by not starting from a point of impact to the system it is not fair to the surface water interests or the groundwater interests that are inside the determination.

Those who participated in the preparation of this are those identified in the cc's. Our hope is that you will distribute this with the Departments straw dog either before or during the meeting.

Thanks

Brian

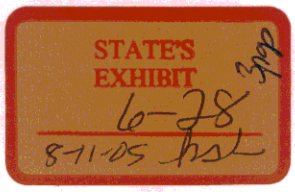
NPPD Water Resources Manager
402-563-5335 / 5095 Fax

-----Original Message-----
From: Barels, Brian L.
Sent: Thursday, March 03, 2005 6:13 PM
To: Steven Huggenberger; Kraus,, Don- Central Nebr. Pub. Pow. & Irr. Dist.; Hutchinson,, Larry- (non-NPPD recipient); Chad Smith; Dennis Strauch; goldfish@binary.net
Cc: Barels, Brian L.
Subject: RE: De minimis examples

Group attached is a shot at the revised version we discussed today. Please take a look at it and provide any recommendations you have by 10am tomorrow so that we can get it to DNR. I have also posed a question for your consideration at the end of the new "Geographic Area"
section. Thanks

Brian

NPPD Water Resources Manager
402-563-5335 / 5095 Fax



Fully Appropriated. A stream/river basin, subbasin, or reach shall be "fully appropriated" when any of the following occurs:

(a) Any subsequent water use is interfering with the water supply for an existing appropriation located within any basin, subbasin, or reach by more than one per cent; or

(b) The flow of the stream/river is calculated to be insufficient to provide recharge to aquifers, or portions of aquifers, in amounts that will sustain the existing uses of water withdrawn from wells located in those aquifers or portions thereof. Wells placed at a depth and location to withstand normal seasonal fluctuations in the static water level of the aquifer during periods of drought shall be considered when determining the fully appropriated status; or

(c) The flow of the stream/river is expected to cause the State of Nebraska to be in noncompliance with an interstate compact, decree, legally enforceable contract/agreement or with a state or federal law.

When making the above determinations the department shall include in its determinations the following information:

1) scientific information identifying impacts of "hydrologically connected" uses to the basin, subbasin or reach being considered including studies, models reports, testing and other information related to the hydrology and geology related to water supply availability for existing uses and for future uses, and

2) Hydrological effects caused by existing groundwater uses that will have an effect on stream flows during the next 50 year period, and

3) Impacts of existing groundwater uses on the transport of storage water or other protected waters through the basin, subbasin or reach, and

4) Impacts of groundwater pumping on the aquifers dependent on flows in streams for recharge as identified in (b) above, and

5) Hydrological effects of long term trends in precipitation and meteorological conditions, and

6) The cumulative effects of existing groundwater and surface water uses for the next 50 years; and

7) The effects of the development trends over the last five years for new surface water and groundwater uses projected over the next five years as it impacts the long term availability of hydrologically connected water supplies.

Geographic Area: When identifying the area that the Department considers surface water and groundwater are hydrologically connected for the purpose of making the fully appropriated determination the Department shall identify the area bounded by the 1/50 line.

206 S.W2d 362	1/8 of 1%
33 F.Supp 40	15% not de minimis
121 F.2d 829	A few dollars out of $150,000
123 P.2d 505	2 feet out of 120 feet
148 F.2d 890	7% not de minimis
46 F. Supp 939	18% not de minimis
124 F.2d 645	$336.12/$27,274.29 or .01%
147 F.Supp2d 556	10 minutes out of 8 hour shift .02%
522 US 1110	$32,000 out of 4 million or .008% Bankruptcy expense
533 F.Supp 540	Less than 1%
634 F.Supp 419	Less than 1/2%
585 A2d 580	13% not de minimis
899 F.2d 1407	15 minutes out of 8 hour shift not de minimis .03

STATE'S EXHIBIT 6-29 8-11-05 hsl

A stream will be considered to be fully appropriated if, after considering the impact of the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete stream flows within the next 50 years, there is insufficient stream flow in the river reach to meet the following interference criteria:

During the period of May 1 through September 30, inclusive, the most junior irrigation right is able to divert on average the greater of ninety percent of the crop irrigation requirement or six inches of surface water per acre, and during the period of July 1 through August 15, inclusive, must be able to divert least eighty-five percent of the above amount.

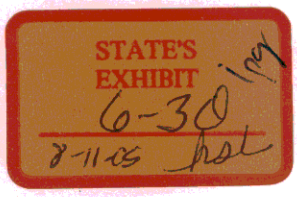
In the rare event that the most junior water right is not an irrigation right, the Department will utilize a standard of delivery appropriate for the use.

The geographic area within which the Department preliminarily considers surface water and ground water to be hydrologically connected is the area within which pumping of a well for 50 years will deplete the river or a base flow tributary thereof by at least 10% of the amount pumped in that time.

The availability of stream flow will be based on the percentage of time the most junior right was able to divert water during the previous 20 year period and the projected impacts of depletions on stream flow from existing wells over the next 25 years.

The types of scientific data and other information that will be considered for making preliminary determinations required by Neb. Rev. Stat. Section 46-713 will include:

Surface water administrative records
Department Hydrographic Reports
Department and United States Geological Survey stream gage records
Department's registered well data base
Water level records and maps from Natural Resources Districts, the Department, the University of Nebraska, the United States Geological Survey or other publications subject to peer review
Technical hydrogeological reports from the University of Nebraska, the United States Geological Survey or other publications subject to peer review
Ground water models that the Department determines are based on sound science
Current rules and regulations of the Natural Resources Districts



FENNEMORE CRAIG

MEMORANDUM

TO: Negotiated Rule Making Committee

FROM: Donald G. Blankenau

DATE: March 14, 2005

RE: Fully Appropriated Determination

To date, the Negotiated Rule Making Committee has focused its efforts on resolving two issues: (1) What is the appropriate geographic area within which the impact of wells located therein will be used to calculate impacts to streamflow? This area is to be determined based on the degree of hydrologic connectivity surrounding streams; and (2) How many years into the future should lag effects be considered?

While both issues need to be resolved, we cannot fairly reach consensus without first understanding the tool to be used to evaluate the impact of ground water use on streamflows. If the tool to be used will predict, to a high degree of accuracy, the impact of ground water use on streamflows over a large area and over a long period of time, a more aggressive regulatory approach is warranted. If, however, the tool produces results with a wide error range, its use would not be appropriate. If that same tool can be used to a high degree of accuracy on a more limited geographic and temporal scale, then it may be used within those limitations. *Whatever the tool or technique, it cannot be used beyond the limitations of its ability to produce accurate results.*

The DNR has indicated that it will use the Jenkins Method (or Solution) as the tool to make these determinations. The Jenkins Method has been criticized for over-estimating the impact to streamflow by ground water wells. Some commentators have concluded that the impacts to streamflow may be over-estimated by as much as 60%. *See* Evaluation of Simplified Stream-Aquifer Depletion Models for Water Rights Administration (Sophocleous, et al. 1995). Added to that margin of error is an additional 10% margin of error commonly accepted for streamflow measurements. While the Jenkins Method may be modified by the DNR to more accurately account for the impacts to streamflows, we have not yet been educated as to what those modifications might be and whether they will result in a more accurate result.

In anticipation of the March 18, 2005 meeting, I have prepared the following proposal for conducting a "fully appropriated" analysis. I have intentionally left blank the key portions of this proposal in light of the concerns expressed for the accuracy of the predictive tool.

Fully Appropriated. A stream/river basin, subbasin, or reach shall be "fully appropriated" when any of the following occurs:

(a) Within the next ___year period, the flow of the stream/river is calculated to be insufficient in an average precipitation year, to provide the amount of water needed to achieve

Negotiated Rulemaking Proposal
3-17-05

Any fully appropriated determination should reasonably attempt to take into account all impacts from all hydrologically connected areas except those impacts which would be de minimis.

A stream will be considered to be fully appropriated if, after considering the impact of the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete stream flows within the next 50 years, there is insufficient stream flow in the river reach to meet the following interference criteria:

(a) The flow available for the most junior surface water appropriation is at least 99% of its appropriated right at the same frequency of occurrence of flows available as when the appropriation was granted; or

(b) The flow of the stream/river is calculated to be sufficient to provide recharge to aquifers, or portions of aquifers, in amounts that will sustain the existing uses of water withdrawn from wells located in those aquifers or portions thereof. Wells placed at a depth and location to withstand normal seasonal fluctuations in the static water level of the aquifer during periods of drought shall be considered when determining the fully appropriated status; or

(c) The flow of the stream/river is expected to allow the State of Nebraska to be in compliance with an interstate compact, decree, legally enforceable contract/agreement or with a state or federal law.

The geographic area used by the Department of Natural Resources (DNR) to make the above determination shall be sized to ensure that the above criteria are maintained.

The types of scientific data and other information that will be considered for making preliminary determinations required by Neb. Rev. Stat. Section 46-713 will include:

1) The best scientific information and tools available to the DNR to identify impacts of "hydrologically connected" uses to the basin, subbasin, or reach being considered.
2) Surface water administrative records
3) DNR hydrographic reports
4) DNR and USGS stream gage records
5) DNR registered well data base

Exhibit 33

History of Drought in Nebraska

HARRY E. WEAKLY

Historical events prove that drought in the Great Plains is a normal phenomenon. When periods of high precipitation offset the dry years, some people forget the normalcy of dry weather. This lack of foresight is often a prelude to disaster.

Long-term soil and water conservation planning, accompanied by the highest type of managerial skill, is required for success in Great Plains agriculture. Sound conservation plans, flexible operations, and adequate reserves created during times of plenty are essential if farm and ranch operators are to bridge the unpredictable by inevitable periods of drought.

This article is a valuable contribution to the science of soil conservation in the Great Plains. Knowledge of the long-term history of drought helps one understand the realities of the problem and how to live with it. Soil conservationists may well ponder the significance of the author's conclusions. They are most fascinating. They present challenges that must be met through further intensive study of the long-term problems of agriculture in the Great Plains.

—Cyril Luker[1]

RECORDS of weather measurements do not cover a very great span of time in the United States. The maintenance of official records was first authorized in 1870 by an act of Congress, which required that weather records be kept at all military posts. A few scattered records kept by different individuals in the eastern part of the nation go back as far as 1644. But a large proportion of the continuous records now available span less than 75 years, although some continuous records of the weather have been kept for 100 years.

Continuous weather records in Nebraska were started in 1850. In Western Nebraska, the earliest records available were made in 1865, the date of the first precipitation records at North Platte. Prior to that time, many travelers recorded observations of the climate in Nebraska; these are now in libraries as diaries and published works. N. A. Bengston (*1*), of the University of Nebraska Geography Department, reviewed a number of these early records in a paper presented at the Nebraska State Irrigation Association convention in 1935. The following is a review of some of the weather information presented by Bengston.

Between 1804 and 1806, the Lewis and Clark expedition passed through the general area that is now the State of Nebraska, but recorded very little detail concerning climatic conditions. However, in 1807, Lieutenant Zebulon M. Pike explored the Arkansas and Red rivers to their headwaters, and in his "Account of Expeditions to the Sources of the Mississippi and Through the Western Parts of Louisiana", published in 1810, drew a very vivid picture of the country as he found it. He wrote: "Here a barren soil, parched and dried up for eight months of the year, presents neither moisture nor nutrition sufficient to nourish the traveler."

Many other early references were made to the desert character of the country, but there were also those who saw it in quite a different light, as did Mrs. George Donner, who, after traversing the plains in 1846, wrote as follows: "The prairie between the Blue and Platte rivers is beautiful beyond description. Never have I seen so varied a country, so suitable for cultivation."

These writings indicate that alternate periods of drought and abundant rainfall have been the normal condition in the plains area as long as the white man has been aware of its existence.

In recent years, knowledge of past climatic variations has been greatly advanced by the refinement of methods for reading and interpreting the various records that are available in nature. These records not only antedate the records maintained by man, they also far antedate the time at which modern man first became an element in the ecological system in the plains area.

Annual Growth Rings of Trees

Among the natural records that rank high as indicators of past climatic conditions are the annual growth rings of trees. The value and reliability of these annual growth rings in depicting climatic conditions have been demonstrated by Douglas (*3, 4*), Glock (*5*), Schulman (*6, 7, 8, 9, 10*), and Weakly (*11*).

The relatively long tree ring records of alternate periods of drought and of more favorable rainfall conditions in the plains are of great value as a means of interpreting the factors that may have been instrumental in causing the various changes in occupation of the area by man. This is especially true of the later prehistoric periods. These records may also provide a useful tool for future agricultural planning in the region.

Tree ring records present a definite picture of recurring climatic phenomena that may offer a clue to probable future climatic patterns. If previous climatic patterns recurred with sufficient regularity, they would be valuable in predicting actual conditions with a considerable degree of dependability. However, at the present time, this does not appear to be the case.

Dendrochronology in Nebraska

The first consideration in the use of dendrochronology in a study of climate is the construction of a good, dependable master chart. This chart must be well substantiated by the inclusion of many wood samples from the area under consideration. Apparently, the usefulness of a given master chart for the western Nebraska region may extend over an area with a radius somewhat in excess

Harry E. Weakly is a soil scientist with the Agricultural Research Service, U. S. Department of Agriculture, Lincoln, Nebraska.

This article is a contribution from the Soil and Water Conservation Research Division, Agricultural Research Service, U. S. Department of Agriculture, in cooperation with the Nebraska Agricultural Experiment Station. It is Journal Series Paper number 1126 of the Nebraska Agricultural Experiment Station.

[1] Assistant to the Administrator for Great Plains Conservation, Soil Conservation Service, U.S. Department of Agriculture.

Reprinted from JOURNAL OF SOIL AND WATER CONSERVATION
Volume 17, Number 6, November-December, 1962

of 100 miles, particularly if it is a river valley area. In such an area, the climate may be expected to be fairly uniform for a considerable distance up or down the river from a given point. Apparently, this is not true to quite the same extent for those areas lying at angles to the stream valley. In the case of droughts of 5 or more years' duration, the agreement, or uniformity of formation of tree rings, over large areas may be very good; in the case of shorter periods of drought, the agreement is not so widespread.

The Nebraska tree ring record that spans over 750 years, together with the additional four undated sequences, provides an excellent record of the occurrence of alternate wet and dry periods in the area.

The rainfall pattern for the general area is such that tree growth is largely dependent upon seasonal rainfall rather than upon stored moisture. Average annual rainfall at the North Platte Weather Bureau Station is 17.54 inches; as shown in figure 1, 80 percent of this amount falls between April 1 and September 30.

The average amount of precipitation is apparently at a rather critical point because a relatively small decrease may affect tree growth quite seriously. If the deficiency were to be continued for several years, the effect might be magnified out of all proportion to the actual decline in amount of precipitation. When rainfall for May and June is decidedly deficient but precipitation during the rest of the season is normal, the result is the production of an occasional double ring or, more frequently, a very wide band of summer wood in the annual ring.

Response to droughty conditions is frequently not immediate in the case of young trees. As they extend their root systems, these trees have access to moisture stored during previous years. In the case of old trees, response to droughty conditions may be slightly more immediate. As shown by their ring patterns, they also usually show a lag in full recovery after a protracted drought of considerable severity. This lag is variable in length, but it averages approximately 6 years for western Nebraska.

The coefficient of correlation between the annual increment of wood produced by cedar trees in the North Platte area and precipitation for the same area is 0.540 when the data are related in their natural sequence. If the relationship is computed on the basis of a 6-year lag in the effect of drought upon tree growth, the correlation coefficient varies from 0.804 for material from within 5 miles of the precipitation recording station to 0.788 for material from the area within 100 miles of the same station.

Thus, the actual date of the end of prehistoric droughts might be from 2 years to as much as 7 years earlier than the actual tree ring patterns indicate. This is no way impairs the value of tree ring records for dating, since the establishment of dates is based upon a simple count of rings after a sequence has been established.

TABLE 1. Periods of Drought of 5 or More Year's Duration, Number of Years Duration of Each Drought and Number of Years Between Each Drought for a Period of 748 Years at Ash Hollow, Garden County, Nebraska (2).

First Year	Last Year	Duration of Drought	Years Between Droughts
		years	
1220	1231	12	
1260	1272	13	29
1276	1313	38	3
1383	1388	6	33
1438	1455	18	16
1493	1498	6	38
1512	1529	18	15
1539	1564	26	10
1587	1605	19	23
1626	1630	5	20
1668	1675	8	38
1688	1707	20	13
1728	1752	5	21
1761	1773	13	29
1798	1803	6	26
1822	1832	11	25
1858	1566	9	25
1884	1895	12	18
1906	1913	8	10
1931	1940	10	17
1952	1957	6	11
Average		12.8	23.9

Major Drought Periods

A list of major periods of drought, together with their duration and the duration of the more favorable periods between droughts is given in table 1.

The tree ring chronology for western Nebraska at present extends back to the year A.D. 1210 in a continuous dated sequence from an archeological site (2) in Ash Hollow, which is near the town of Lewellen in Garden County. This same site also provides four additional floating or undated chronologies extending backward from some time prior to 1210. These cover 154, 246, 102, and 86 years, respectively, with gaps of unknown length between each pair of chronologies. Taken together these chronologies provide a record of 588 years, and if the gaps between them could be bridged, there would be an unbroken record extending into the centuries before Christ. Such a tree ring chronology would provide an extremely valuable record of precipitation in western Nebraska.

During the periods between the serious droughts, there were occasional single dry years or even groups of 3 or 4 dry years; as they have been in modern days, these short dry periods may have been of considerable importance to the general economy of the area at the time aboriginal inhabitants occupied the plains.

During the 748 years covered by this study, there were 21 droughts that lasted for 5 years or longer. The average length of these droughts was 12.8 years and the periods between them averaged 23.9 years. Eight of the periods of drought averaged 20.6 years in length and one of them lasted for 38 years. Between 1512 and 1605 there were three serious droughts and between 1688 and 1707 there was a 20-year drought.

These lengthy periods of drought make the 10-year drought of the 1930's seem almost minor; yet when we recall the impact that the drought of the thirties had upon the general economy of the nation, we can imagine the probable consequences one of the much longer droughts would have upon conditions in this country.

Master Charts for Nebraska

Five master charts have been prepared for the western half of Nebraska. These charts are centered in Custer, Lincoln, Frontier, Morrill, and Dawes Counties. One master chart has been prepared for a limited area in the northeastern part of the state; it is centered in Knox, Cedar, and Dakota counties.

There is some agreement between the several charts, particularly insofar as certain of the major droughts are concerned. A drought which shows up as as very severe one in Dawes and Morrill counties may show up with less severity to the south and east in the Lincoln and Frontier county areas as well as in the Custer County area.

The agreement between the chart for northeastern Nebraska and the one for Morrill County is surprisingly good when one considers the distance separating the two areas. Agreement with the Custer County area chart is also very good, particularly for the 1740 to

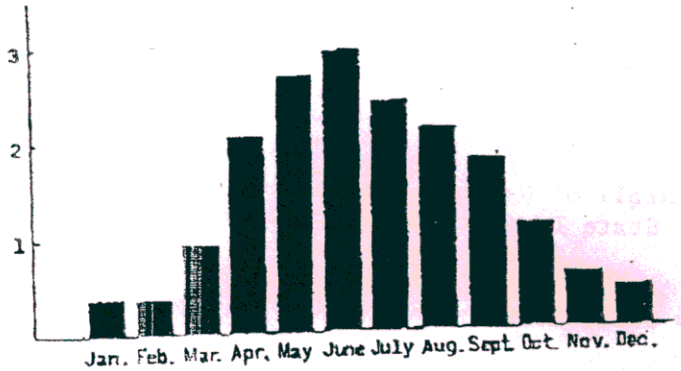


Figure 1. Average monthly precipitation in inches at the North Platte Weather Bureau Station.

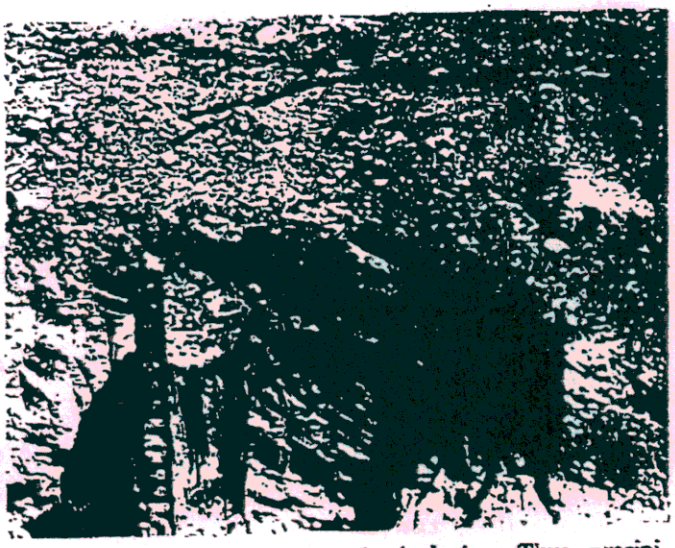


Figure 2. Excavation of a cedar stump which was still standing upright where it grew in the bottom of a canyon in Lincoln County, Nebraska. It was covered with 13 feet of soil; the lower 9 feet was wind blown material.

1780 period. The master chart for the northeastern Nebraska area is based upon one piece of oak, which covers the entire span of the chart, and three pieces of cedar, which cover the most recent 80 years of the chart.

The chart for Dawes County is based upon 11 sections of cedar and 7 of western yellow pine. A number of specimens of each species exceeded 250 years in span. The material from Morrill County was all cedar except for cores from two living western yellow pines. Some of the specimens in this lot covered a span in excess of 350 years.

The material upon which the remaining charts were based was all cedar. The Lincoln County chart is supported by several hundred specimens; many of them covered a span of over 200 years. A number of them were from tree stumps which were standing upright where they grew in the bottom of a canyon. These stumps were covered by a fill of 13 feet of soil, the lower 9 feet being wind-deposited material, and the remaining 4 feet a combination of alluvial and colluvial deposits. At the 9-foot level, all the stumps were burned off and the soil contained a layer of charcoal and ashes several inches thick. This layer also contained many mineralized hackberry seeds and charred twigs of hackberry and cottonwood.

These trees died primarily as a result of the 26-year drought between 1539 and 1564. A few died during or immediately after this drought, while others struggled on a few more years under the handicap of a 9-foot fill of soil over their roots. All were dead by 1600, and they probably were burned off shortly thereafter. Figure 2 shows one of these stumps during the process of excavation. Several stumps were nearly 2 feet in diameter and contained over 200 useable rings. The center rings, in an area up to 6 inches in diameter, were rotted away.

If we consider further the average duration of both the dry periods and the periods of more favorable precipitation, and assume that the first and last periods recorded here were of average duration, the average length of time between the middle years of successive drought periods would be 33.7 years. This is very close to three times the length of the 11.3-year sunspot cycle recognized by astronomers. However, periods of drought do not appear to follow a regular pattern of recurrence. The length of the various cycles exhibited in this study varies from 17 to 46 years. Further mathematical treatment of the data may disclose factors that will make it possible to recognize other cycle lengths or combinations of cycle length so that a greater degree of regularity of recurrence can be established.

Analysis of Tree Ring Records

The chief value of these tree ring records as they now stand is to show the occurrence of periods of drought for a considerable time span prior to recorded climatic history. They also give an overall picture of past climatic conditions. They show that during 269 years of the past 748 the annual growth of trees in western Nebraska has been below normal. Thus, 36 percent of the total years of the period were sufficiently dry to adversely influence crop production. Records show that at North Platte, precipitation was below the average for the period during 42 of the 84 years from 1875 to 1958, inclusive. Thus, precipitation was below average exactly 50 percent of the time.

Some of the protracted periods of drought were undoubtedly of such severity as to have caused the complete depopulation of large areas. Though brief in comparison with some dry periods, the severe drought of the 1930's caused large shifts in population.

Another feature of the major droughts, and possibly of the shorter one from 1931 to 1940, is the profound effect they exerted upon the soil itself. During at least some, and undoubtedly all, of these major droughts, great changes probably took place over large areas. The 26-year drought of 1539 to 1564 provides a good example. There is evidence, as shown in figure 2, that very extensive movement of soil by wind took place during that period. Also, it is quite probable that a very considerable change occurred at that time in the sand hill areas which lie south of the Platte River in southwestern Nebraska.

However, there is currently no evidence directly connecting any other areas with the other great droughts considered in this study, but the effect of other droughts surely were similarly profound.

These conditions and the knowledge gained from tree ring records indicate the importance of and need for long-time planning by agencies and people interested in land use and conservation in the Great Plains. No presently known land use or conservation practice can be expected to successfully cope with the effects of a severe drought of 20 years' duration.

B

6-69

REFERENCES

1. Bengston, N. A. 1935. Is the rainfall of Nebraska decreasing? Proc. 43rd Convention Nebraska State Irrigation Association, Bridgeport, Nebraska.

2. Champe, John L. 1946. Ash Hollow Cave. New Series No. 1, University of Nebraska, Lincoln.

3. Douglass, A. E. 1914. A method of estimating rainfall by the growth of trees. Publ. 92. Carnegie Institution, Washington, D. C.

4. Douglas, A. E. 1937. Tree rings and chronology. Phys. Sci. Bul. 1, University of Arizona, Tucson.

5. Glock, Waldo S. 1937. Principles and methods of tree ring analysis. Publ. 486. Carnegie Institution, Washington, D.C.

6. Schulman, Edmund. 1939. Classification of false annual rings in west Texas pines. Tree Ring Bul. 6(2):11-13.

7. Schulman, Edmund. 1940. A bibliography of tree ring analysis. Tree Ring Bul. 6(4):27-39.

8. Schulman, Edmund. 1942. Centuries long tree indices of precipitation in the Southwest. Bul. Am. Meteorol. Soc. 23(5): 146-161 and 204-217.

9. Schulman, Edmund. 1945. Tree rings and runoff in the South Platte River basin. Tree Ring Bul. 11(3):18-23.

10. Schulman, Edmund. 1945. The range of ring sensitivity. Tree Ring Bul. 12(1):5-8.

11. Weakly, Harry E. 1943. A tree ring record of precipitation in western Nebraska. J. Forestry 41:816-819.

Exhibit 34

PATHFINDER IRRIGATION DISTRICT

P. O. Box 338
Mitchell, Nebr. 69357
(308) 623-1022
FAX (308) 623-2028

April 29, 2005

Ms. Ann Diers
Legal Counsel
Department of Natural Resources
301 Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

RE: Negotiated Rulemaking Committee Report and Draft DNR Rule

Dear Ms. Diers:

In response to your memorandum of April 22, 2005, I would like to provide the following comments on the Draft Committee Report and the proposed NDR rule.

Draft Report

I agree that the committee reached consensus as described in Section A) of the report, however I do not believe the committee reached consensus on all of Section B). The sentence in the first paragraph at the top of page 3 "Third, assuming that when a junior appropriator is allowed to divert they could divert at their permitted diversion rate, the analysis should determine what percentage of the crop irrigation requirement for corn could be met by these diversions". ***Comment: I don't believe the group reached consensus on the use of a percentage of the crop irrigation requirement as the means of analysis to determine an acceptable level of surface water interference. At least one group had proposed using a percentage of the junior's appropriation right at the same frequency of occurrence of flows available as when the appropriation was granted.*** The remainder of the report captures the various proposals considered, but for which no consensus was reached.

DNR Proposed Rule Pursuant to Neb. Rev. Stat. §46-713

Comments:

1) ***I am concerned with using 25 years as the period of time for projecting the lag effect of hydrologically connected wells. My concern is that if a basin is determined to be fully appropriated using only 25 years to project the lag effects it could leave a considerable amount of stream flow depletions unaccounted for that could have a significant impact on surface water appropriations after the determination is made. I believe the full future stream flow depletion of connected groundwater wells should be factored into the analysis to accomplish what was***

Exhibit 35

CENTRAL
Nebraska Public Power and Irrigation District

VIA FACSIMILE

May 2, 2005

Ms. Ann Diers
Legal Counsel
Department of Natural Resources
301 Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

RE: Negotiated Rulemaking Committee Report and Draft DNR Rule

Dear Ms. Diers:

The following comments are provided in response to your letter dated April 22, 2005 requesting comments from participants in the Negotiated Rulemaking Process:

Comments – Draft Report

The letter indicates that the group reached consensus on the types of data needed for the determination of a fully appropriated basin (Paragraph A, items 1 through 9) and on the first paragraph of B and C. I have reviewed the report and do not believe consensus was reached on the first paragraph under Paragraph B. The comments of a number of individuals supported a concept that focused on the amount of water available when the appropriation was granted with any decrease in water supply triggering a "fully appropriated" status. The first paragraph of B would be consistent with that analysis except for the sentence – "Third, assuming that when a junior appropriator is allowed to divert they could divert at their permitted diversion rate, the analysis should determine what percentage of crop irrigation requirement for corn could be met by these diversions."

I believe analysis should stop when the amount of flow at the permitted diversion rate has been determined and the impacts of existing and future development have been analyzed. The proposed additional analysis is unnecessary and in fact could result in a further reduction in water supply available for a surface water appropriator.

I do not believe consensus was reached on the first paragraph of Section B and do not support that language, but do support Paragraph A, items 1 through 9 and the first paragraph of section C.

Home Office • 415 Lincoln St. • P.O. Box 740 • Holdrege, NE 68949-0740 • (308) 995-8601 • Fax (308) 995-6935

Exhibit 36

MIDDLE LOUP PUBLIC POWER AND IRRIGATION DISTRICT

P.O. BOX 37
ARCADIA, NEBRASKA 68815-0037
308-789-6401 • FAX 308-789-6[illegible]9///
ALLAN J. SCHMIDT, MANAGER

May 2, 2005

Department of Natural Resources
P.O. Box 94676
Lincoln, NE 68509-4676

Attn: Ann Diers

Dear Ann:

Regarding the "Proposed Rule" pursuant to Nebraska State Statute 46-713, I would prefer that the criteria for fully appropriated be that 99% of the time the most junior appropriators would be able to divert at the same rate and frequency as at the time the appropriation was granted.

However, all things considered, I can support the rule as proposed.

As to the report of the "Negotiated Rulemaking Committee" I have nothing to add to the "draft" as written.

Thank you for the opportunity to comment.

Sincerely,

al

Allan J. Schmidt

Exhibit 37

UPPER BIG BLUE
Natural Resources District

105 N. Lincoln Avenue
York, Nebraska 68467
(402) 362-6601
Fax (402) 362-1849
www.upperbigblue.org

RECEIVED
MAY 0 3 2005
NATURAL RESOURCES

Ann Diers
Legal Counsel
Nebraska Department of Natural Resources
P.O. Box 94676
Lincoln, Nebraska 68509-4676

May 2, 2005

Re: Negotiated Rule Making Report

Dear Ann,

I, as a member of the Negotiated Rule Making Committee, do not agree that there was a consensus on all of Paragraph B of the Report of Negotiated Rule-making Committee. I did not agree to step 2 of the 3 step process. A consensus was not reached in Paragraph B that lag effect should be used at all in the determinations of fully appropriated basins.

Lag time is a contentious issue because the lag time concept is vague and subject to many interpretations. For any lag time period chosen there are changing hydrologic effects over time, such as changes in cropping, weather, and water use which make any predictions suspect.

Instream flows were discussed at committee meetings but are not mentioned in the report. I have attached written comments about instream flows .

The report is correct in the respect that the committee did not reach consensus on standards to be used to determine the fully appropriated basin boundaries. I have also attached written comments about the boundary issue.

Sincerely,

John C. Turnbull
General Manager

enclosures

STATE'S EXHIBIT 6-37 4pp 8-1-05 hsl

John Turnbull
Upper Big Blue NRD
May 2, 2005

Submitted for the Report of the Negotiated Rule Making Committee

Comments concerning the Declaration of Basins Fully Appropriated when Instream Flows are a consideration

Existing statutes for Instream Flows:

46-2,115. **Application for instream appropriation; approval; when.**

An application for an instream appropriation which is pending on or filed after January 1, 1997, shall be approved by the director if he or she finds that:

(1) **In order to allow for future beneficial uses, there is unappropriated water available to provide the approved instream flow rate at least twenty percent of the time during the period requested.**

(2) The appropriation is necessary to maintain the existing recreational uses or needs of existing fish and wildlife species;

(3) The appropriation will not interfere with any senior surface water appropriation;

(4) The rate and timing of the flow is the minimum necessary to maintain the existing recreational uses or needs of existing fish and wildlife species; and

(5) The application is in the public interest.

The application may be granted for a rate of flow that is less than that requested by the applicant or for a shorter period of time than requested by the applicant.

Issues

- Future beneficial uses were found to be important by the Legislature when this statute was adopted.
- Instream flows are granted at a much lower standard than natural flow rights for irrigation
- Junior water rights are administered when instream flows are not met (100% administration on 20% availability)
- Junior water rights are administered the same for other surface rights which had to meet a much higher standard of availability when granted.

- Administration of junior water rights for instream flows will cause basins to be declared fully appropriated when instream flows were granted on the water only being available 20% of the time, which can preclude the future beneficial use of water.

Proposal

If instream flow right shortages may cause a basin to be declared fully appropriated then;

- A river basin shall be declared fully appropriated because of instream flow shortages, or the administration of water rights junior to instream flow appropriations caused by instream flow shortages, only if the stream flows meet the full instream flow appropriation less than 20% of the time over the previous 20 year period of historical record.
- The outer boundary of the integrated management area shall be the within the area in which a pumping well will cause a depletion to stream flow of 28% of what is pumped in 40 years

3

John Turnbull
Upper Big Blue NRD
May 2, 2005

Submitted for the Report of the Negotiated Rule Making Committee
Comments on the Proposed Boundaries of Fully Appropriated Basins

For the past several years the Upper Big Blue and other NRDs have been led to believe by studies, decisions, and policy discussions with others including the Department of Natural Resources that the 28% in 40 years line would constitute any boundary for regulatory efforts in the management of hydrologically connected groundwater and surface water.

- The 28% in 40 Year concept was outlined in the 1981 Missouri River Basin States Association study
- The 28% in 40 years concept used in the Nebraska v. Wyoming case as the boundary
- The 28% in 40 years line used in the extensive discussions in the development of Nebraska's New Depletion Plan and in fact is the boundary used in that plan
- The 28% in 40 years line was used by the Department of Natural Resources for the boundary of the over-appropriated area of the Platte River

- Regulatory boundary lines that encompass more area, such as 10% in 50 years, are unacceptable to the Upper Big Blue NRD
  - Boundary lines such as the 10% in 50 years mean that a well which is along the West Fork of the Blue River in Hamilton County would be regulated for the Platte even though the well would be south of the Blue River, south of Lincoln Creek, and south of Beaver Creek, all which drain into the main stem of the Blue River in Seward County. That is unexplainable and unbelievable to our water users, municipal and agricultural alike.
- Lag time is a contentious issue as well
  - The lag time concept is vague and subject to many interpretations
  - For any lag time period chosen there are changing hydrologic effects over time, such as changes in cropping, weather, and water use which make any predictions suspect

Exhibit 38

Ann Diers

From: duanehovorka@alltel.net
Sent: Monday, May 02, 2005 9:45 PM
To: Chad Smith
Cc: lhutch@ngpc.state.ne.us; adiers@dnr.state.ne.us
Subject: Negotiated Rulemaking Committee: Draft Report

I took a quick look at the draft report, and I think my initial comments may be about things the committee may not have considered (and so were not included in the report), so they could be more appropriate to the draft rule than the report itself.

In the list of the scientific data DNR should consider in determining the status RE appropriation, there are other agencies that have collected stream flow data that should be included, where available. For example, DEQ often collects stream flow and aquatic habitat data when they are doing water quality assessments or water pollution investigation reports, and those should be considered where available and appropriate. I suspect Game & Parks collects stream flow data when doing fish sampling as well. Other government agencies, like the NRDs, Fish & Wildlife Service, and University of Nebraska may have collected stream flow conditions for one reason or another, and although those may have no reason to be 'peer reviewed', they should be treated as valid, government generated data, and used where relevant. DNR doesn't have stream gauges everywhere, and where other information is available it should be considered.

In the discussion of the general process agreed to for determining whether a basin was fully appropriated, the references to the ability of the most junior water right holder to divert water to meet their water right left a question in my mind of how that treats in-stream flow rights (which aren't 'diverted'), in a situation where they are the most junior water right. There is no real 'opportunity to divert' the water, so the test there would seem to be whether and how often the full in-stream flow appropriation is met. I recognize there is disagreement on just how those in-stream flow rights should be treated specifically, but the possibility seems to be ignored for the general process question.

Chad was our representative on the committee, so I will defer to him on the question of whether the report accurately reflects the committee's points of agreement and disagreement. But, given the short timeline, I wanted to get this in. If these are points the committee didn't discuss (or didn't agree on), we can certainly offer them as comments on the draft rule.

Duane Hovorka
Nebraska Wildlife Federation

STATE'S EXHIBIT 6-38 6-1-05 hst

Exhibit 39

FENNEMORE CRAIG, P.C.

1221 N Street, Suite 801
Lincoln, Ne 68508-2016
(402) 323-6200

Donald G. Blankenau
Direct Phone: (402) 323-6201
Direct Fax: (402) 323-6210
dblankenau@fclaw.com

Law Offices
Phoenix (602) 916-5000
Tucson (520) 879-6800
Nogales (520) 761-4215
Lincoln (402) 323-6200

May 3, 2005

Ann Diers
Department of Natural Resources
P.O. Box 94676
Lincoln, NE 68509-4676

Re: Comments on Draft Negotiated Rulemaking Committee Report

Dear Ann,

Please find enclosed the comments to the LB 962 Report and Rule submitted by the League of Nebraska Municipalities. Thank you for your hard work in this matter.

Sincerely,

FENNEMORE CRAIG, P.C.

Donald G. Blankenau

STATE'S EXHIBIT 6-39 MP
8-11-05 hst

RECEIVED
MAY 04 2005
DEPARTMENT OF NATURAL RESOURCES

COMMENTS BY THE LEAGUE OF MUNICIPALITIES ON THE DRAFT NEGOTIATED RULEMAKING COMMITTEE REPORT AND PROPOSED RULE.

Pursuant to Neb. Rev. Stat. § 84-929, the League of Municipalities offers the following comments to the Nebraska Department of Natural Resources' ("DNR") draft Negotiated Rulemaking Committee Report ("Report") and Proposed Rule ("Rule").

I. General Comments.

The last Committee meeting was convened on March 18, 2005 in Grand Island, Nebraska. At that time, the Committee was informed by the DNR that the Report and Rule would be circulated within a few weeks. The Report and Rule were sent to the Committee members over a month later on April 22, 2005, with a request that comments be provided by May 3, 2005. We initially note that the comment period for both documents is very short and may prevent members that are required to operate under the direction of a Board of Directors or Supervisors, from providing full and adequate comments. A longer period would have been more appropriate and allowed for more complete comments.

As a practical matter, we recognize that not all of the comments submitted by Committee members will be compatible, making the assembly of the Report difficult if not impossible. Where no reconciliation can be made between incompatible comments, we ask that the Report simply recognize the position of each Committee member and attach all written comments as an appendix to the Report.

II. Comments On Report.

1. Page 1, paragraph 2 of the report states that "Although not required by statute, the Committee also tried to develop the criteria that will be used for making preliminary determinations of: (B) whether a river basin, subbasin, or reach is fully appropriated without the initiation of additional uses, and (C) the geographic area within which the Department considers surface water and ground water to be hydrologically connected for the purposes of any such determination , pursuant to the evaluations and reports that the Department [DNR] must complete by January 1, of each year beginning in 2006 . . .".

While not expressly required by statute, we believe the DNR must promulgate a rule/regulation that specifies in detail the methodology to be used in making the preliminary determinations. Identifying the methodology and providing for its application allows interested persons to evaluate whether the appropriate data and information are being used. Doing so also illuminates the DNR's regulatory process and helps create public confidence in the regulatory system. This methodology should be identified and explained before any public hearing on the rule to allow for meaningful comment at the public hearing.

In addition, we note that there are several dimensions to the criteria that the Committee attempted to develop: First, we sought to clarify how far into the future "reasonably foreseeable" is within the meaning of Neb. Rev. Stat. § 46-713(3). While the Report notes this at page 3[1], it should be mentioned within the context of page 1. Second, we attempted to identify the precise methodology to be employed by the DNR in calculating streamflow depletions within the

[1] The Committee discussions of the time component, briefly addressed at Page 3, also included 10 year, 15 year, and 20 year options. Those options are not mentioned in this report.

temporal criteria. We explained that the methodology to be used and the time dimension must be considered together in order to evaluate the precision and reliability of the calculated results. Pages 3 and 4 of the Report allude to this aspect but the Report is not clear. We ask that this concern be included.

Ideally, the rulemaking process would have started with a description of the analytical methodologies available for making streamflow depletion calculations and an examination of the limitations associated with each. Knowing the methodologies and their limitations would have allowed the Committee members to select the most suitable geographic and temporal criteria given the limitations of the preferred methodology. As accomplished, the geographic and temporal criteria were reviewed in isolation from the methodology. As a result, the methodology ultimately selected may be ill-suited to the task. The League alluded to this issue in its memo attached to the Report at Ex. 32. We ask that this concern be mentioned in the report.

2. Page 1, paragraph 3 of the report states that "Jeff Shafer and James Cannia from the Department [DNR] provided a method and examples of an analysis that could be used to determine the amount of flow expected to be available without further development in a river basin." We believe this statement is misleading. Although Mr. Cannia identified a methodology for the analysis, he did not explain how that methodology would be used. When asked to provide an explanation, Mr. Cannia indicated that he would attempt to put into writing an explanation as to how that methodology would operate in the coming weeks. To date, no such explanation has been provided nor has there been a reason given to the Committee members as to why it has not been provided. We believe the report should explain this factual matter. In addition, the Report should state that the methodology to be used by the DNR has not been made public nor has there yet been a commitment to make it available at any time.

3. We do agree that consensus was reached with respect to Page 2, section A).

4. Page 2, section B) addresses a "three-step process" for making the preliminary determinations of whether a river is fully appropriated. We agree that this process correctly addresses the intent of LB962 but, as noted above, the details of that "process" were the focal point of the negotiated rules effort.

5. Page 3 addresses, among other things, the "lag effect" associated with ground water consumption. The Report suggests that only two temporal options for the lag effect were considered – 50 and 25 years. This is not correct. A wide variety of years were mentioned and the League of Municipalities specifically suggested 10 years. See exhibits 22 and 31. The Report should be changed to reflect those other options.

6. Pages 4 and 5 focus primarily on the geographic area for consideration but fail to mention how information from that geographic area will be used to calculate streamflow depletions. If the DNR will not or cannot, at this time, disclose the methodology and how it will be implemented, that decision should be reflected in the Report.

7. We also believe it is important to note that several persons requested the DNR to test the validity of any streamflow depletion methodology by making calculations within the historical record. For instance, the methodology could be implemented using data from 1990

and projecting out to the most recent flow data on stream reaches that have not seen any significant development within that time frame. This exercise might provide adequate verification for the approach being considered. All information regarding such an approach should be publicly available.

III. Comments On Rule.

1. There appear to be significant limitations on the level of analysis DNR is able to perform due to time constraints and budgets. Given these limitations, we do not believe it is presently possible to accurately determine streamflow depletions 25 years into the future. We suggest that 10 years be selected. This rule can be modified as additional tools and information becomes available to extend the period.

2. When LB962 was being considered, the anticipated geographic scope of the resulting regulations was thought to be relatively narrow. Indeed, initial indications were that the geographic scope would be largely limited to alluvial areas within the 28% depletion over 40-year ("28/40") delineation. The calculations performed by DNR staff for the Committee show a vastly broader area that will subject perhaps as much as 70% of Nebraska to the regulations within the first year or two. Surprisingly, this delineation does not increase significantly using DNR's proposed 10% depletion over 50-year standard.[2] Despite the similarities of geographic scope, we believe altering one of the fundamental bases for support of LB962 will result in a negative response from the public and recommend against so doing.

Because the geographic area is widely believed to be restricted to the area within the 28/40 delineation, we strongly recommend limiting the rule to that area.

3. We believe the Rule must identify the methodology the DNR intends to use to make calculations of streamflow depletions. In addition, we believe the DNR must provide a public explanation of how it employs that methodology in making its calculations. This explanation should be of sufficient detail to allow for replication. We recognize that is may be difficult for DNR to accomplish but the failure to illuminate the precise details of this process will be viewed suspiciously by the public. Moreover, we believe the failure to do so may make future designations subject to legal challenge.

[2] We are without information to conclude the delineations made by the DNR staff were correctly calculated and accurately mapped. For purposes of these comments, we assume those actions were properly performed.

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / www.outdoornebraska.org

May 3, 2005

RECEIVED
MAY 05 2005
DEPARTMENT OF
NATURAL RESOURCES

Roger Patterson
Department of Natural Resources
301 Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

Dear Roger,

Our agency was represented on your departments Negotiated Rulemaking Committee concerning development of a proposed rule pursuant to Neb. Rev. Stat. § 46-713. Our agency is charged with managing public fish, wildlife and recreation resources, including obligations under the Nebraska Nongame and Endangered Species Conservation Act (Neb. Rev. Stat. § 37-807). We have fish production facilities in several river basins that rely on surface and groundwater water supplies. These facilities provide statewide benefits and local economic benefits. In addition we have agency wildlife and recreation and park lands throughout the state that are managed for fish and wildlife resources and access for public recreation opportunities. Flowing streams as well as wetlands, lakes, reservoirs and sandpits that provide amenities to these areas are susceptible to surface and groundwater depletions.

As a trustee for these public resources, we believe that evaluation of Nebraska river basins needs to consider the broadest geographic scope of hydrologically connected groundwater practical to incorporate all but deminimus amounts of depletions. We believe the cumulative impacts of depletions from hydrogeologically connected wells outside the proposed 10 percent in 50-year boundary would be significant and remain unregulated under the proposed rule.

Concerning your department's proposed rule the Nebraska Game and Parks Commission recommends that the rule be amended in four places. First, the rule needs to include language about the standards used in considering instream appropriations. Second, the geographic scope of hydrologically connected groundwater use will deplete the river or a base flow tributary that should be increased to at least 2.5 percent of the amount pumped in 50 years. Third, the determination of fully appropriated should take into consideration the needs of state listed threatened and endangered species. Fourth, scientific data and information readily available to the Department for preliminary determination needs to include available information on state threatened and endangered species. Enclosed is DNR's proposed rule with our requested amendments inserted and underlined.

We appreciate the opportunity to be represented on the negotiated rulemaking committee and collaborating with you and your staff on natural resource issues and obligations of

STATE'S EXHIBIT 6-40 pp
8-1-05 kdl

our respective departments. Please contact me with questions or comments regarding our recommendations.

Sincerely,

Rex Amack

Rex Amack, Director
Nebraska Game & Parks Commission

C: Kirk Nelson, Don Gabelhouse, Jim Douglas

One attachment

Department of Natural Resources
Proposed Rule Pursuant to Neb. Rev. Stat. § 46-713

A stream will be considered to be fully appropriated if, after considering the impact of the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete stream flows within the next 25 years, there is insufficient stream flow in the river reach to meet the following interference criteria:

During the period of May 1 through September 30, inclusive, the most junior irrigation right is able to divert surface water adequate to deliver on average ninety percent of the crop irrigation requirement, and during the period of July 1 through August 15, inclusive, must be able to divert and deliver at least eighty-five percent of the above amount.

In the rare event that the most junior water right is not an irrigation right, the Department will utilize a standard of delivery appropriate for the use.

For instream appropriations for fish, wildlife and recreation, the department will utilize the standards for with the appropriation was granted.

The geographic area within which the Department preliminarily considers surface water and ground water to be hydrologically connected is the area within which pumping of a well for 50 years will deplete the river or a base flow tributary thereof by at least ~~10%~~ 2.5% of the amount pumped in that time.

The availability of stream flow will be based on the percentage of time the most junior right was able to divert water during the previous 20 year period and the projected impacts of depletions on stream flow from existing wells over the next 25 years.

Determination of fully appropriated should take into consideration the needs of state listed threatened and endangered species to avoid potential adverse impacts.

For making preliminary determinations required by Neb. Rev. Stat. Section 46-713 (Reissue 2004, as amended) the Department will use the best scientific data and information readily available to the Department. Information to be considered will include

Surface water administrative records
Department Hydrographic Reports
Department and United States Geological Survey stream gage records
Department's registered well data base
Water level records and maps from Natural Resources Districts, the Department, the University of Nebraska, the United States Geological Survey or other publications subject to peer review
Technical hydrogeological reports from the University of Nebraska, the United States Geological Survey or other publications subject to peer review

Ground water models
Current rules and regulations of the Natural Resources Districts
Distribution and habitat requirements of state listed threatened and endangered species

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / www.outdoornebraska.org

May 3, 2005

Ms. Ann Diers, Legal Counsel
Department of Natural Resources
301 Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

RE: Negotiated Rulemaking Draft Report

Dear Ms Diers,

In response to your memorandum of April 22, 2005, I have reviewed the Draft Committee Report and would like to provide the following comments.

Concerning the types of scientific information in (A) I concur the committee reached consensus. However our agency feels that information on the occurrence, distribution and habitat information for state listed threatened and endangered species should be added to the list. This was not an item presented or discussed at Committee meetings.

Although some documents are attached to the draft report, I believe the information described in (B) and (C) should better summarize the areas of disagreement by members or groups on the committee. In particular the most of the surface water interests supported a geographic scope of the hydrologically connected area that included all but de minimus depletions. This group's March 18th recommendation "*that the flow available for the most junior surface water appropriation must be at least 99% of its appropriated right at the same frequency of occurrence of flows available as when the appropriation was granted*" was based on legal definitions of "de minimus" as being no more than 1%. Also I believe the group's recommendation "*The geographic area used by the Department of Natural Resources (DNR) to make the above determination shall be sized to ensure that the above criteria are maintained*" also relies on the de minimus concept concerning the geographic area to be used in evaluating river basins.

There was no consensus reached on evaluation of instream appropriations and other non-irrigation uses, therefor the issue was left somewhat in limbo for DNR to "utilize a standard of delivery appropriate for the use." The NGPC considers this a little to vague for instream appropriations for fish and wildlife and has proposed a standard for which the appropriation was granted.

Thank you for the opportunity to assist DNR with the Negotiated Rules Committee assignment and the opportunity to review and comment on the Committee Report.

Sincerely,

Larry Hutchinson, Program Manager
Water Resources Program

C: Rex Amack, Kirk Nelson, Don Gabelhouse, Jim Douglas

Exhibit 42

Ann Diers

From: Steven Huggenberger [huggenbe@ci.lincoln.ne.us]
Sent: Tuesday, May 03, 2005 3:17 PM
To: Ann Diers
Subject: Comments on Report and Draft Rule - Negotiated RulemakingCommittee

I have reviewed the comments of Don Kraus and would join those. I would also add the following. There are many unknowns in the draft which leave a great deal of discretion without any guidance to the Department. The draft suggests some determination would be made about diversions and deliveries that were "on average" 90% of the crop irrigation requirement. It is unknown what is being averaged here or how. Also, there is nothing known about what "standard of delivery appropriate for the use" means in regard to other appropriative rights.

Steven Huggenberger
Assistant City Attorney
City of Lincoln
575 S. 10th, Rm 4201
Lincoln, NE 68508

402-441-7286 FAX 402-441-8812

STATE'S EXHIBIT 6-42 8-11-05 ASL

Exhibit 43

Ann Diers

From: Barels, Brian L. [blbarel@nppd.com]
Sent: Tuesday, May 03, 2005 1:21 PM
To: Ann Diers
Cc: Roger Patterson
Subject: FW: Negotiating Rulemaking DRAFT 5-3-05.doc

Negotiating
ulemaking DRAFT 5

<<Negotiating Rulemaking DRAFT 5-3-05.doc>> Ann -- attached please find a letter transmitting my comments on the Negotiated Rulemaking Committees draft report and DNR's proposed rule. Let me know if you have any questions.

Brian

NPPD Water Resources Manager
402-563-5335 / 5095 Fax

May 3, 2005

Ms Ann Diers
Legal Counsel
Nebraska Department of Natural Resources
301 Centennial Mall South, 4th Floor
PO Box 94676
Lincoln NE 68509-4676

RE: Negotiated Rulemaking Draft Report and Proposed Rule

Dear Ms Diers,

In response to your April 22, 2005 letter transmitting the draft of the negotiated Rulemaking Committee Report and the Departments proposed rule pursuant to Neb. Rev. Stat. Section 46-713, I would like to provide the following comments and recommendations:

Comments on Proposed Rule Pursuant to Neb. Stat. Section 46-713

1. Paragraph 1
   a. Line 1-2 – Reword lines 1 and 2 to read as follows:
   A stream will be considered to be fully appropriated if after considering existing and new surface water uses together with the lag effect from the pumping of existing wells and new wells in the hydrologically connected area that…

   Add a new second paragraph:
   The department will use the previous five year period to intricate the track for new wells and surface water uses during the next five year period.

   This is required by the 46-713 as section (1) (a) states..."*the Department of Natural Resources shall complete an evaluation of the expected long-term availability if hydrologically connected water supplies for both existing and new surface water uses and existing and new groundwater uses in each of the states river basins....*"

   b. Line 3 – "will deplete stream flows within the next 25 years" – this phrase is inconsistent with the definition of hydrologically connected in paragraph four and should be changed to read "will deplete stream flows within the next 50 years".

L-90

2. Paragraph 2
    a. This paragraph is inconsistent with the basis of issuance of the most junior irrigation right as the statutes and the water rights are not based on "crop irrigation requirements". If an irrigator had a 1 cfs water right and a .5 cfs crop irrigation requirement and diverted that amount for five consecutive years, the statues would require the right to be adjudicated to .5cfs. Additionally, only being able to divert a percentage of the crop requirement in most cases makes this provision uneconomical.
    As such, I recommend that the department adopt the recommendation made by 6 members of the negotiated rulemaking committee which is that the standard be based on "deminimus impact to the appropriated right based on the frequency of occurrence of flows available when the water right was granted". The group had indicated an acceptable definition of "deminimus" would be 1%.

3. Paragraph 3
    a. By adopting the standard recommended in 2 above, paragraph 3 is no longer needed. This standard of a department decision provides no assurance in the statutes or the regulation for non-irrigation uses such as municipal induced recharge, reservoir storage, electric generation cooling water or industry; all uses which are critical to the economic well-being of Nebraska.

4. Paragraph 4
    a. Line 3 – I am not sure what the definition is for "base flow tributaries" and recommend that words "base flow" be deleted.
    b. Line 3 – "10%" – Recommend that this be changed to 5% or maybe 2.5%. This is based on impacts to storage water deliveries or deliveries made by a three state agreement for endangered species enhancement. These waters are required to be protected by the department from surface water diversion and should receive the same protection from taking by the effect of a well or wells. A standard of 10% will likely not stand up to a legal challenge.

5. Paragraph 5
    a. Line 3 – "25 years" should be "50 years" to be consistent with the definition of hydrologically connected.

6. Paragraph 6
    a. In making the preliminary decision, the Department should use, in addition to the list of information provided in the Proposed Rule the following information:
        i. Hydrolocally effects, including trends in precipitation, on stream flows and groundwater supplies.

Comments on Draft Report of Negotiated Rulemaking Committee

1. Paragraph 2 – item (B) line 5
   a. Item B limits the evaluation to existing uses while 46-713 (1)(a) indicates the determination will be based on existing and new uses (see 1st sentence of paragraph 1)

2. Section (B) 2nd paragraph, line 8, sentence which begins with "Third"
   a. I do not believe the group reached consensus on the use of the crop irrigation requirement, or a percentage of the crop irrigation requirement as a means to determine an acceptable level of surface water interference, in fact, I believe the group was closer to a consensus not to use this methodology. In addiction, there is no basis for diversion of a percentage of the crop irrigation requirement where there are a variety of delivery means including lengthy canals.

I appreciate the opportunity to serve on the Negotiated Rulemaking Committee and was hopeful a consensus could have been reached on this important issue. Should you have any questions concerning the above comments and recommendations, please contact me.

Sincerely,

Brian L Barels

Brian L. Barels
Water Resources Manager

/sr

cc Roger Patterson

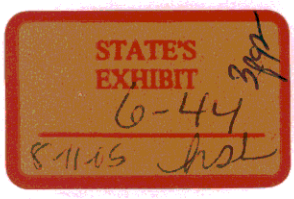
Exhibit 44

Ann Diers

From: Dennis Schueth [dschueth@uenrd.org]
Sent: Tuesday, May 03, 2005 1:36 PM
To: Ann Diers
Subject: Comments on Rule

Ann, attached are the UENRD comments on the Rule and Draft Report. If you have any questions please give me a call.

Dennis Schueth, GM
Upper Elkhorn NRD
301 North Harrison
O'Neill, NE 68763
Office: 402-336-3867
Fax: 402-336-1832



May 3, 2005

Ann Diers,Legal Counsel
Nebraska Department of Natural Resources
PO Box 94676
Lincoln, Nebraska 68509-4676

Re: Negotiated Rule Making Report

Dear Miss Diers,

I want to say that participating in the Negotiated Rule Making Committee was a very interesting experience. I truly believe that this Committee expressed openly the importance and concerns of developing a Proposed Rule. The challenges and decisions made by this committee, NRDs and NDNR will definitely have an impact on the State and how these organizations administer ground and surface water issues in the future. Here are my comments:

Draft Report of Negotiated Rulemaking Committee

Page 2, B): Do the words "generally agreed" mean the same as consensus? I do not know if they mean the same.

Page 3, B):

Second to last paragraph: I still find it hard to understand how the lag effect from ground water pumping will effectively be calculated or determined on stream flow. I feel that more data needs to be collected throughout a basin to effectively measure this effect.

Page 4, C):

First paragraph: my comment to this is reflected in my statement above for page 3, second to last paragraph. The hydrologically connected boundary that is ultimately determined will be very difficult to convey to the producers that are on either side of the line. I hope the methodology that is ultimately used in determining a preliminary determination by the Department of Natural Resources is outlined for the NRDs. This methodology will definitely have to be prepared and understood prior to the public hearings for the NRDs when a preliminary designation has been determined.

Second Paragraph: During one of the meetings James Cannia, DNR and other DNR representatives stated that in any preliminary determination of a basin the best scientific data will be utilized. In this paragraph it states: "where no valid ground water model exist, the determination would be based on the Jenkins method, a method used for similar water administration purposes in other states". Don Blankenau's Exhibit #31 raised

questions regarding how the Jenkins Method has been over-estimated by as much as 60%. Mr. Cannia explained the circumstances associated with that comment and it had to do with the shallow wells, close proximity to the stream and the short period of time that the study took place. The question though is still out there and it is; "What is the percentage of certainty/accuracy with the Jenkins Model over a longer period of time?

Page 5, C):

Second Paragraph: In determining the stream depletion line many options were requested and looked at and the committee came to no consensus. The Department suggested the criteria be determined on a 10% - 50 year stream depletion line. It should be noted that the Committee did not meet consensus on these numbers. From what I understand the development of the Jenkins Model was developed utilizing a 28-40 line and various Committee members, which the Upper Elkhorn NRD was one of them, would like to see that standard be utilized instead of the 10-50.

I respect that DNR has a difficult job ahead of them based on current law, time constraints, budgetary issues and will be making decisions on the best available information at their disposal at the time of determining the status of future basins. The Jenkins Model may be the best that we currently have now and I hope we can improve on the accuracy or development of the model or another model in the future.

Regarding the Proposed Rule; <u>Department of Natural Resources Proposed Rule Pursuant to Neb Rev. Stat. § 46-713</u>

After reviewing the <u>Draft Report of Negotiated Rulemaking Committee</u> the Proposed Rule does reflect that the interference criteria, the hydrologically connected area, and the availability of streamflow was proposed or recommended by the NDNR. Since the Negotiated Rulemaking committee were unable to come to consensus on these issues the NDNR had to make these recommendations that are currently in the <u>Department of Natural Resources Proposed Rule Pursuant to Neb Rev. Stat. § 46-713.</u>

I would also encourage that the Department continually review periodically the best scientific data and information as technology becomes available in evaluating the status of a basin.

I apologize for the lateness of my comments but if you have any questions please feel free to give me a call.

Sincerely;

Dennis Schueth, General Manager
Upper Elkhorn NRD
301 North Harrison, O'Neill NE 68763
402-336-3867

3
6-06

CENTRAL PLATTE
NATURAL RESOURCES DISTRICT
215 N. Kaufman Avenue
Grand Island, Nebraska 68803
(308) 385-6282 FAX (308) 385-6285
www.cpnrd.org

May 3, 2005

Ann Diers, Legal Counsel
Nebraska Dept. of Natural Resources
P.O. Box 94676
Lincoln, NE 68509-4676

RE: Negotiated Rule Making Committee Report

Dear Ann:

As a member of the Negotiated Rule Making Committee, I do not agree that there was "general agreement" to a three step process as outlined in sub-section B) on page 2 of the Draft Report. There remains real concerns about "lag effects" and how they will be calculated, so much that there is a question whether they should be included until the process that will be used is laid out and understood by everyone.

An even bigger contention about "lag effect" is the length of time that will be considered as an impact on surface flows. My concern is that twenty-five years is too long a period to expect any degree of certainty due to changes in crop patterns, weather, water use and a host of other items that can impact hydrology. I would suggest the Department drop lag effect or adopt ten years as a more realistic time period.

Instream flows were discussed at the committee meeting, but are not mentioned in the report. Previous to LB 962 instream flow water rights were not considered in the management of groundwater for the benefit of inter-related surface water. Because of that exclusion, instream flow water rights could be granted for flows that were only there twenty percent of the time, a much lower standard than other water rights which need to be there about ninety percent of the time.

Now instream flow can not only cause groundwater to be regulated just like other surface rights can, but can also cause basins to be declared fully appropriated. The Department needs a rule for instream flow water rights that junior water rights are not administered, and basins are not declared fully appropriated unless, after reviewing the long-term historic average stream flows, the instream flow appropriations are being met less than twenty percent of the time. As an

alternative to that "rule", the instream flow law should be changed to require the approved rate to be available at least ninety percent of the time in order to place instream flows on the same standard as all other water rights.

The final comment on the rules deal with an item that we all agree can't be agreed upon, which is the geographic area within which surface water and groundwater should be considered hydrologically connected (and thereby managed). For the last ten (10) years or more we have been led to believe, based upon policy discussions and decisions, that forty years and twenty-eight percent depletion would be the standard that would constitute any boundary for regulation.

- Nebraska's New Depletion Plan for the Platte River Cooperative Agreement uses 40 yr./28% as the management boundary.

- Nebraska agreed to use 40 yr./28% as the boundary in the Nebraska vs. Wyoming settlement.

- The Director of DNR asked our NRD to impose a suspension of drilling new wells in the western part of our NRD (above Elm Creek) within the 40 yr./28% boundary.

- The Department of Natural Resources set the 40 yr./28% boundary for over-appropriated parts of Central Platte NRD.

We would strongly suggest that the Department re-consider their proposed 50/10 boundary and return to the standard that has been utilized, the 40 yr./28%, as a boundary.

Respectfully,

Ron Bishop
Manager

RB/dj

Exhibit 46

220 Center Ave.
PO Box 81
Curtis, NE 69025

Phone: 800-873-5613
Fax: 308-367-4285
Email: dsmith@mrnrd.org

Middle Republican Natural Resources District

RECEIVED
MAY 06 2005
DEPARTMENT OF
NATURAL RESOURCES

Memo

DATE: May 3, 2005
TO: Roger Patterson
FROM: Dan Smith, Representing The Nebraska Association of Resource Districts
RE: Negotiated Rule Making

Please accept these comments in regard to the draft Report of Negotiated Rulemaking Committee and the Proposed Rule Pursuant to Neb. Rev. Stat 46-713.

It is my belief that the committee has not reached consensus on paragraphs B and C in the report. I think consensus was reached on paragraph A. Because of the relationship of paragraphs B and C to the general structure of the proposed rule, I feel it is not possible to say there is consensus with that proposal.

Specific concerns - Report:

While the mechanics of developing different zones of influence were discussed no specific methodology was presented. Whether the lines drawn on a map are 28/40 or 10/50 or some other relationship, I feel I need to know more before I can make an informed decision. 28/40 has been generally accepted as the standard and because of its familiarity is easier to defend.

I can't accept any line that would include an area out of the basin being designated. I don't believe that statutes allow for it.

Future lag effect of 25 years is to much. Since these will be yearly evaluations I feel 10 years is more appropriate.

Instream flow appropriations should be considered only to the extent they expected flow.

Specific Concerns – Proposed Rule:

Paragraph 1 of the proposed rule reads as being over appropriated to me. I thought the intent was to designate the basis etc. before they became over appropriated.

I agree with the concept that availability of surface water be considered on a percent of the time available. I'm not sure 90% and 85% are the proper numbers.

Opposed to 10/50

Opposed to lag effect of 25 years

Accept list of data and information. Would like to see language say "include but not limited to"

Ann Diers

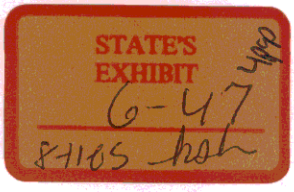
From: Jay Rempe [JayR@nefb.org]
Sent: Tuesday, May 03, 2005 9:16 AM
To: adiers@dnr.state.ne.us
Subject: Comments on Neg Rulemaking Report

Ann,

Attached please find Nebraska Farm Bureau's comments on the negotiated rulemaking report and a few general comments on the proposed rule. Please let me know if you have any questions. Thank you.

(See attached file: NFBF Comments on Neg Rule Report.doc)

Jay E. Rempe
Nebraska Farm Bureau Federation



Comments of the Nebraska Farm Bureau Federation on the Draft Negotiated Rulemaking Committee Report and Proposed Rule

May 3, 2005

Comments on the Report

1. The report does not state the Department of Natural Resources (DNR) formed the Negotiated Rulemaking Committee (Committee) in response to a request that a committee be formed. We believe the report should include background information that the committee was formed by DNR in response to a request.

2. Page 1, paragraph 2 of the report states "The primary purpose of the Committee was A) to develop . . ." Rather than state a primary purpose of the committee, we would suggest the report use language from the Committee Charge dated December 8, 2004 (Exhibit 2). The language in the charge does not specify a primary or secondary purpose, but simply states the purpose or charge of the Committee. We believe the report should better reflect the charge as outlined in the Dec. 8 document.

3. Page 1, paragraph 3 includes a sentence stating, "Jeff Shafer and James Cannia . . . provided a method and examples of an analysis that could be used to determine the amount of flow expected to be available without further development in a river basin." This sentence is confusing and we are unsure as to what it is referencing. Jeff Shafer did provide the Committee with a Flow Administration Analysis. James Cannia outlined and defended the use of Jenkins method for determining hydrologically connected areas and broadly outlined an analytical approach for determining stream flow depletions, but committee members did not receive a written explanation of the stream flow depletion methodology or examples of such an analysis. If such a written explanation exists, it should be included as an exhibit to the report. The report should also note that committee members did not receive a written explanation and did not discuss the merits of the methodology.

4. Page 2, section A) states the Committee was able to reach a consensus on the types of scientific data. We agree the Committee did reach a consensus.

5. Pages 2 & 3, paragraph 1 of section B) provides a description of a three-step process for making a preliminary determination of whether a basin is fully appropriated. While we generally agree with the assessment that the Committee agreed to a three-step process, the report implies there was an agreement amongst committee members on the specifics of the second and third steps in the process. We do not believe such an agreement was reached. In fact, these issues were the focal point of negotiations. The report should clearly state a consensus was not reached on the specifics on these steps in the process.

The Committee did discuss the need for an analysis to account for lag effects from existing wells, but there was no consensus on a time frame, an analytical approach or the methodology to use other than DNR should use the best science and techniques available. Nebraska Farm Bureau Federation believes DNR should use the best science, methodology or techniques available and that the DNR should clearly outline the methodology it intends to use when making the determinations required under Neb. Rev. Stat. Section 46-713 in the negotiated rulemaking report. The outline of the methodology should be in sufficient detail to allow for review and duplication by independent parties. Moreover, DNR should clearly detail the science and methodology it uses each time it issues the report required under Neb. Rev. Stat. Section 46-713. Such transparency will ease concerns the public may have regarding the science and methodology used by DNR.

Finally, while the Committee agreed the third step should analyze whether an amount of "needed" water can be supplied, no consensus was reached on the criteria for such an analysis. The report does provide background material of the various alternative proposals made to the Committee on the criteria to be used on the third step, but again it should clearly state a consensus was not reached.

6. Page 4, section C), paragraph 1 states the Committee agreed on an assessment of hydrologically connected surface and ground water for the purposes of fully appropriated determinations in terms of the percentage of the amount of water pumped over a specified time period. We agree the Committee agreed to such an approach. However, the report should clearly state the Committee did not reach a consensus on the percentage or time period to use in such an assessment.

General Comments on the Proposed Rule

1. Neb. Rev. Stat. Section 46-713 provides three criteria DNR must consider when determining whether a basin should be designated fully appropriated. The proposed rule does not reference any of these criteria outlined in statute. We believe the rule should reference the three criteria.

2. Nebraska Farm Bureau continues to have concerns with extending the area of hydrologically connected surface and ground water beyond the 28%/40-year line. The 28%/40-year line is widely known and accepted by landowners and the public. To go beyond the line will push the public acceptability and the credibility of the process in LB 962 and integrated management plans. Second, while we believe DNR will use the best science available, even the best science available isn't without a margin of error. The relationship between ground and surface water is extremely complex and site dependent. Caution would dictate limiting the geographic area to limit the impacts of errors. Otherwise, the state could needlessly interfere with ground water users' right to pump for uncertain benefits to the stream and surface water appropriators. Finally, areas that extend beyond the 28%/40-year line could result in landowners being subject to an integrated management plan for more than one river basin. It would be difficult to convince groundwater users in one basin, several miles from a stream in

another basin, that they must be regulated to protect stream flows for a stream several miles away.

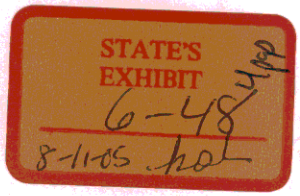
Ann Diers

From: Chad Smith [csmith@americanrivers.org]
Sent: Tuesday, May 03, 2005 1:10 PM
To: Ann Diers
Cc: Ann Bleed; rpatterson@dnr.state.ne.us; duanehovorka@alltel.net; lhutch@ngpc.state.ne.us
Subject: Comments on DNR Proposed Rule

Ann:

Please find attached the comments of American Rivers and the Nebraska Wildlife Federation on the Department's proposed rule for determining fully appropriated streams in Nebraska. If you have any questions, or have any trouble opening the attachment (comments are in Microsoft Word format), let me know. Thanks.

Chad Smith, Director
Nebraska Field Office - American Rivers
6512 Crooked Creek Drive
Lincoln, NE 68516
(402) 423-7930
(402) 423-7931 (FAX)
(402) 432-7950 (CELL)
csmith@americanrivers.org



American Rivers * Nebraska Wildlife Federation

May 3, 2005

Roger Patterson, Director
Nebraska Department of Natural Resources
301 Centennial Mall South
Lincoln, Nebraska 68509-4676

Dear Roger:

We write to provide brief comments on the proposed rule pursuant to Neb. Rev. Stat. § 46-713. Chad Smith represented both American Rivers and the Nebraska Wildlife Federation on the Negotiated Rulemaking Committee (Committee) that attempted to develop a draft rule and reach consensus on key points related to determining the geographic scope and nature of fully appropriated streams in Nebraska.

Draft Report

In general, we agree that the Committee reached consensus on Items 1-9 under Section A and the first paragraph under Section C in the Draft Report. These portions of the draft report do fairly represent the points of discussion that the Committee reached consensus on during the course of our deliberations. However, we do not agree that consensus was reached on the portion of the Draft Rule in the first paragraph under Section B. There was a long discussion about this issue among the Committee, but it is not clear that the Committee ever fully agreed that a percentage of the Crop Irrigation Requirement should be used to determine an acceptable level of surface water interference.

DNR Proposed Rule

We provide additional comments on the draft rule below that we believe need to be addressed to develop a robust and useful final rule:

"Types of scientific data and other information to be considered for making preliminary determinations"
Comment – Though we agree that the Committee reached consensus on the list of nine types of scientific data and other information to be used in determining whether a stream is fully appropriated, there is additional information we believe needs to be included. The Nebraska Department of Environmental Quality (in special investigations and during routine water quality testing) and other government agencies (Nebraska Game and Parks Commission fish sampling data, University of Nebraska-Lincoln research projects, U.S. Fish & Wildlife Service data, etc.) often collect streamflow data in projects that are not necessarily candidates for peer review. Where applicable, the Department of Natural Resources (DNR) should consider relevant information available from these other government agencies. Further, we presume that the DNR will also consider credible documented information from other sources.

"A stream will be considered to be fully appropriated if, after considering the impact of the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete stream flows within the next 25 years, there is insufficient stream flow in the river reach to meet the following interference criteria"
Comment – We do not believe that 25 years is an adequate amount of time to capture the full range of potential impacts on streamflow. If a well has been in place for 20 or 30 years, the depletion hydrograph may now have flattened out enough that 25 years into the future may be a reasonable approximation of maximum lag effect. However, for relatively recent wells, the hydrologic curves are still climbing fairly quickly, so 25 years does not look long enough into the future to provide a reasonable approximation of maximum impact.

"During the period of May 1 through September 30, inclusive, the most junior irrigation right is able to divert surface water adequate to deliver on average ninety percent of the crop irrigation requirement, and during the period of July 1 through August 15, inclusive, must be able to divert and deliver at least eighty-five percent of the above amount."
Comment – We believe that relying solely on the availability of diversion for the most junior irrigation right does not always tell the whole picture. For example, where the presence of a federal or state threatened or endangered species (T&E) would likely preclude the granting of a new surface water right in a basin where (absent the T&E issue) there is unappropriated supply, and absent a specific in-stream flow right that adequately covers the T&E issue, the stream should be considered fully appropriated. If the stream is not considered fully appropriated, and the DNR would preclude a new surface water appropriation due to the T&E issue but would not preclude new groundwater wells, the result would be an inequity between surface and groundwater users and further harm to both the streamflow and the species.

"In the rare event that the most junior water right is not an irrigation right, the Department will utilize a standard of delivery appropriate for the use."
Comment – This relates to the point that Chad repeatedly broached during the Committee's deliberations. Given the implementation of LB 962 and the growing trend in being creative with water use and water rights (including the ability to transfer water rights), non-irrigation rights will be involved in making determinations about whether a stream is fully appropriated. Logically, the most junior water right would be most willing to sell or lease their right for some other beneficial use. The DNR should at least clarify whether the appropriate standard will be based on the underlying water right (in most cases, irrigation), or the current use of that right (e.g., should that irrigation right have been leased long-term by a municipality).

"The geographic area within which the Department preliminarily considers surface water and ground water to be hydrologically connected is the area within which pumping of a well for 50 years will deplete the river or a base flow tributary thereof by at least 10% of the amount pumped in that time."
Comment – The 10%/50 year line is too narrowly drawn and will leave a substantial amount of streamflow depletion outside the hydrologically connected area. For example, at year 50 a well could be depleting by far more than 10% of the *annual* amount then pumped, and yet the amount pumped "in that time" (50 years) could still be under 10%. This kind of result is one reason why more stringent criteria should be used – that would help avoid the "edge effect" of driving new water development to just outside the 10%/50 year line, leaving those operators unregulated but

3

creating a larger burden on operators within the line. Using more stringent criteria would also put Nebraska more in line with neighboring states like Colorado, which should be considered given ongoing negotiations over management of a transboundary river like the Platte. Steve Huggenberger with the City of Lincoln did some background legal research to determine the legal precedent for determining a "de minimis" impact and could not find precedent for anything greater than 1%. This suggests that to make the final rule enforceable, the 10% should be changed to 1% or a figure closer to this "de minimis" factor. Even if the 10%/50 year line is used, the test should be changed (in your example) to be the estimated amount of stream depletion occurring *in year 50* (e.g., if the result is that, by year 50, the annual draw from the well is depleting the tributary by at least 10% of the amount pumped).

We also want to raise a concern about the "base flow tributary" notion, as it does not seem to be grounded in the best science. In basins like the Platte, Republican, or Loup with well-developed sand and gravel beds underlying the stream, subsurface water flow through the gravel along the streambed is very different than subsurface water flow perpendicular to the streams through a composite of clay, silt, and sand. If so, then even where you have a streambed with no visible surface flow you have subsurface streambed flow that is feeding the river, and thus reductions in surface or groundwater supply to that 'dry bed' tributary would further reduce downstream flow.

General Procedure

Comment – The draft rule does not include any procedural details or specifics about the timeline for parties to submit additional information for the DNR to consider, when public review of the scientific date used by the DNR will take place, how long the public will have to comment on a proposed determination, what timeframe the DNR will use to make a final determination, and other items. Even if some of these details are already spelled out in the statute, it seems logical to repeat them in the final rule.

Conclusion

We submit these comments with the intention of providing the DNR with feedback that will strengthen the final rule, make it more responsive to the water resource needs of the state, and make it more useful for Nebraska residents. We appreciate the opportunity to provide these comments, and also to have been able to participate directly in the Negotiated Rulemaking Committee process. If you have questions about any of these comments, please contact Chad Smith at (402) 423-7930 or cmsith@americanrivers.org, or Duane Hovorka at (402) 477-1008 or duanehovorka@alltel.net.

Sincerely,

Chadwin B. Smith, Director
Nebraska Field Office – American Rivers
6512 Crooked Creek Drive
Lincoln, Nebraska 68516
(402) 423-7930
(402) 423-7931 (FAX)
(402) 432-7950 (CELL)
csmith@americanrivers.org

Duane Hovorka, Executive Director
Nebraska Wildlife Federation
PO Box 81437
Lincoln, Nebraska 68501
(402) 477-1008
duanehovorka@alltel.net